IN THE CLAIMS

Please cancel claims 1-38 without prejudice or disclaimer, and substitute new Claims 39-76 therefor as follows:

Claims 1-38 (Cancelled).

39. (New) An optical modulator comprising

an optical splitter for splitting an input light beam into a first and second light beam;

a first and a second waveguide arm connected to said optical splitter for receiving and transmitting therethrough said first and second light beam, respectively, said waveguide arms each comprising a core region comprising a group IV semiconductor material or a combination of group IV semiconductor materials;

an optical combiner connected to said first and second waveguide arm for receiving said first and second light beam and combine them into an output light beam;

a first and a second electrode structure associated with said first and second waveguide arm respectively; and

a driving circuit for supplying voltage to said first and second electrode structure,

said driving circuit being adapted to supply a first modulation voltage superimposed to a first bias voltage to the first electrode structure and a second modulation voltage superimposed to a second bias voltage to the second electrode structure.

40. (New) The optical modulator according to claim 39, wherein the optical splitter is a symmetric splitter adapted to split the input optical beam into two light beams of substantially the same optical power.

41. (New) The optical modulator according to claim 39, wherein the first and second waveguide arm are substantially of the same length.

42. (New) The optical modulator according to claim 39, wherein the group IV semiconductor material of each core region is selected from the group of Si and Ge and a combination thereof.

43. (New) The optical modulator according to claim 39, further comprising a third electrode structure associated with one of the two waveguide arms.

44. (New) The optical modulator according to claim 43, wherein the driving circuit is adapted to supply to the third electrode structure a CW voltage.

45. (New) The optical modulator according to claim 39, wherein the driving circuit is adapted to supply the first and second modulation voltage as electric signals having the same waveform.

46. (New) The optical modulator according to claim 45, wherein the driving circuit is adapted to supply the electric signals with inverted sign.

47. (New) The optical modulator according to claim 39, comprising a silicon substrate with said optical modulator integrated thereon.

48. (New) A unit comprising an optical modulator according to claim 39, and an electro-optical converter adapted to convert an input optical light beam into a corresponding electrical signal.

49. (New) The unit according to claim 48, wherein the electro-optical converter is coupled to the optical modulator so as to supply the corresponding electrical signal to the driving circuit of the optical modulator.

50. (New) The unit according to claim 48, further comprising a filtering element.

51. (New) The unit according to claim 50, wherein the filtering element is coupled to the electro-optical converter.

52. (New) The unit according to claim 50, wherein the filtering element is coupled to the optical modulator.

53. (New) The unit according to claim 50, wherein the filtering element comprises a drop filtering element coupled to the electro-optical converter and an add filtering element coupled to the optical modulator.

54. (New) The unit according to claim 48, wherein at least a portion of the electro-optical converter comprises a group IV semiconductor material or a combination of group IV semiconductor materials.

55. (New) The unit according to claim 54, wherein the electro-optical converter and the optical modulator are integrated on a silicon substrate.

56. (New) The unit according to claim 50, wherein the filtering element comprises a material selected from the group of a group IV semiconductor material, SiO_2, doped SiO_2, Si_3N_4, SiON and a combination thereof.

57. (New) The unit according to claim 54, wherein the electro-optical converter, the optical modulator and the filtering element are integrated on a silicon substrate.

58. (New) A transmitting station comprising an optical transmitter device, the optical transmitter device comprising an optical source for providing an optical light beam at a predetermined wavelength and an optical modulator according to claim 39, associated with the optical source to modulate the intensity of the optical light beam.

59. (New) The transmitting station according to claim 58, wherein the optical transmitter device further comprises an electro-optical converter adapted to convert an input modulated light beam at a generic wavelength into a corresponding modulation electric signal, the electro-optical converter being coupled to the optical modulator so as to supply said corresponding modulation electric signal to the driving circuit of the optical modulator.

60. (New) An optical communication system comprising a transmitting station according to claim 58, and an optical communication line having a first end coupled to the transmitting station.

61. (New) The optical communication system according to claim 60, further comprising a receiving station coupled to a second end of the optical communication line.

62. (New) An optical communication system comprising a transmitting station comprising:

an optical transmitter device wherein said optical transmitter device comprises an optical source for providing an optical light beam at a predetermined wavelength and an optical modulator according to claim 39, associated with the optical source to modulate the intensity of the optical light beam;

an electro-optical converter; and

an optical communication line having a first end coupled to the transmitting station,

the optical modulator and the electro-optical converter comprising a unit adapted to convert an input optical light beam into a corresponding electrical signal.

63. (New) A method for modulating the intensity of a light beam comprising the steps of:

a) splitting the light beam into a first and second light beam;

b) propagating said first and second light beam along a first and a second optical path, respectively;

c) combining said first and second light beam into an output light beam after propagation along the first and second optical path; and

d) introducing through Franz-Keldysh effect a relative phase shift between the two optical paths so as to obtain an intensity modulation of the output light beam;

the step of introducing through the Franz-Keldysh effect being carried out by supplying a first modulation voltage superimposed to a first bias voltage to the first optical path and a second modulation voltage superimposed to a second bias voltage to the second optical path.

64. (New) The method according to claim 63, wherein in step a) the optical beam is split into two light beams of substantially the same optical power.

65. (New) The method according to claim 63, further comprising a step e) of supplying to at least one of the two optical paths a CW voltage for introducing a further prefixed relative phase shift between the two optical paths.

66. (New) The method according to claim 63, wherein in step d) a relative phase shift of π or an integer odd multiple thereof is introduced for obtaining a 0 logic state and a relative phase shift of zero or an integer even multiple of π is introduced for obtaining a 1 logic state.

67. (New) The method according to claim 66, wherein the first and second modulation voltage are electric signals having the same waveform.

68. (New) The method according to claim 67, wherein the electric signals have an inverted sign.

69. (New) The method according to claim 68, wherein the first and second bias voltage and the first and second modulation voltage are such as to induce through the Franz-Keldysh effect an overall phase shift in the two optical paths which is substantially the same in absolute value but opposite in sign when passing from the 1 logic state to the 0 logic state, and vice versa.

70. (New) The method according to claim 69, wherein the first bias voltage is substantially the same as the second bias voltage.

71. (New) The method according to claim 70, wherein the peak to peak amplitude of the first modulation voltage is substantially the same as the peak to peak amplitude of the second modulation voltage.

72. (New) The method according to claim 69, wherein the first bias voltage is different from the second bias voltage.

73. (New) The method according to claim 72, wherein the peak to peak amplitude of the first modulation voltage is different from the peak to peak amplitude of the second modulation voltage.

74. (New) The method according to claim 68, wherein the first and second bias voltage and the first and second modulation voltage are such as to induce through the Franz-Keldysh effect an overall phase shift in the two optical paths which is different in absolute value and sign, when passing from the 1 logic state to the 0 logic state, and vice versa.

75. (New) The method according to claim 74, wherein the first bias voltage is different from the second bias voltage.

76. (New) The method according to claim 75, wherein the peak to peak amplitude of the first modulation voltage is substantially the same as the peak to peak amplitude of the second modulation voltage.